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How We Think: Thinking Critically and Creatively and How Military Professionals Can Do it Better

by Richard McConnell, Leonard L. Lira, Ken Long, Mark Gerges, and Bill McCollum

Sometimes in the course of military operations ill-conceived ideas survive to produce unacceptable outcomes. When this happens, frustrated leaders might ask, "What made us think this would work?" The last decade of persistent conflict has made this a common experience especially when we face problems that are unique. Why would this be the case?

Military professionals prefer thinking that is rational and analytical, and which helps in the selection of ideas that meet feasibility, acceptability, and suitability criterion. In addition, they prefer to select rational and analytical ideas that have a history of working in similar situations as before. This creates a "paradigmatic" mode of typical thinking, which is the opposite of deep, reflective, multi-perspective thinking. This "field expedient" means of just enough thinking to find usual solutions has been so successful, through trial and error, that it takes a deliberate act of will to do original thinking that may take practitioners out of their professional paradigm. It has been so successful that there is great pressure among practitioners to keep doing it precisely because it has been a good way to solve problems that fit within the accepted paradigm of the military profession. In fact, it has made those kinds of problems so "solvable" that we are increasingly only left with the kinds of hard problems that our paradigmatic thinking is not well suited to handle. However, it is not the paradigmatic way of thinking that is "faulty," but rather that when we try to apply it outside of the appropriate context, it begins failing us. The fault is not in the mode of thinking but in its improper application to certain contexts. These contexts are the medium to ill structured problems that FM 5-0 introduces to the profession.

To meet these types of problems, the military profession is expanding its thinking repertoire to include concepts such as "Design", in order to allow its critical and creative thinking to account for problems that fall outside of the assumed context of the military operating parameters. Professional military education institutions have furthered this effort by turning to theorists who have labeled the mental activities of critical and creative thinking. Several military professional practitioners have described a practical explanation of the same type of activities.

This essay will summarize how cognitive theorists have described critical and creative thinking in general, and how some military practitioners have applied them. In doing so, this essay will propose principles of critical and creative thinking applicable to the military profession to provide a common vocabulary that describes the type of thinking we do. To expand and improve critical and creative thinking, military professionals need a common vocabulary that accurately describes the very thinking we are to expand and improve on. Below is a synopsis of how a sampling of theorists and military practitioners describe the mental activities associated with critical and creative thinking.

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Underlying Theory

Benjamin Samuel Bloom's seminal work in this field postulated a taxonomy of learning domains: cognitive, affective, and psychomotor. Specifically, his cognitive domain included knowledge, comprehension, application, synthesis, and evaluation.¹ While Bloom meant for these labels to describe the cognitive objectives in general education, many have successfully extrapolated their meaning to all mental activities of thinking in general.

Stephen D. Brookfield labeled the cognitive activities in critical thinking as four critical thinking processes. These processes included 1) contextual awareness and appreciation of what to observe and consider, 2) exploring and imagining alternatives, 3) recognizing assumptions and conducting analysis, and 4) conducting reflective skepticism and deciding what to do. Brookfield developed these generalized critical thinking labels in order to describe the transferability of learned critical thinking skills from the classroom to their practical application in the real world.²

While Bloom and Brookfield label mental activities in general terms, practitioners must relate these theoretical terms to their particular field. Bloom states, that ideally each major field should have its own taxonomy in its own language -- more detailed, closer to the special language and thinking of its experts, reflecting its own appropriate sub-divisions and levels of education."³ By focusing directly on how military professionals describe their critical and creative thought processes, we can see the direct connection between theory and practice. The Army's Design Methodology provides a great example of this. The term encompassing both critical and creative thinking according to the Army's Field Manual 5-0 is design. Below are descriptions of these activities.

Dr. Jack Kem described this type of thinking as the "activities of design." These included: 1) Understanding the current context; 2) Visualizing the future context or desired end state; and 3) Developing an operational approach or "theory of action" to "bridge the gap" to transform the current environment to the desired end state.⁴

LTC Celestino Perez observed that the activities of design encompass four questions that the commander and staff may ask. They are: 1) What is going on in the environment? 2) What do we want the environment to look like? 3) Where, conceptually, do we act to achieve our desired state? 4) How do we act and speak in order to achieve our desired state?⁵

These questions correspond directly to Bloom and Brookfield's theories and models. Further, both Bloom and Brookfield recognized the critical role of the affective or emotional domain in mature thinkers. Both theorists illustrate how emotional intelligence contributes to success or failure in thinking both critically and creatively. Kem and Perez also reinforce the importance of interpersonal skills identified by theory. Kem, for example, states that it requires collaboration and discourse. Perez carries this requirement further by ascribing an "ethos" to the

¹ Benjamin Samuel Bloom, *Taxonomy of Educational Objectives: The Classification of Educational Goals*, (New York: Longmans, Green, 1956), 6-19.

² Stephen D. Brookfield, *Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting* (Jossey-Bass Higher Education Series) (San Francisco: Jossey-Bass, 1991), page nr.

³ Lorin W. Anderson et al., *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*, abridged edition, 2 ed. (Allyn & Bacon, 2000)79.

⁴ Dr. Jack Kem, *Design: Tools of the Trade* (Fort Leavenworth: US Army Command and General Staff College, 2009).

⁵ LTC Celestino Perez, "A Practical Guide to Design: A Way to Think About It, and a Way to Do It," *Military Review* (March-April 2011), 41-51.

interpersonal skills required to accomplish successfully the cognitive elements of design. He uses the terms collaboration and dialogue in the same sense as Kem. Perez further describes the importance of emotional intelligence by proposing that the military professional takes on “humility and a sense of fallibility.” To assume this humble attitude, Perez asserts that military professionals should not assume that they created the perfect solution for a given problem, but that they continue to question their “understanding and visualization” of all of the variables that make up their environment and their understanding of that environment.⁶

Need for Coherent Vocabulary

When taken in total, the observations of theorists and practitioners describe fundamental principles of critical and creative thinking in the military profession. These principles are analytical, descriptive, synthetic, evaluative, reflective, and interpersonal. Most mental models used by the military profession all reveal traces of these principles. Figure 1 illustrates four examples of potential application. Thus, a better understanding of these six principles is recommended for study to increase the quality of the military profession’s critical and creative thinking skills.

- Identify the problem.
- Gather information.
- Determine evaluation criteria.
- Generate potential solutions.
- Analyze potential solutions.
- Select the best solution.
- Make and implement the decision. .

[‡]Figure 2-1. The Army problem solving model

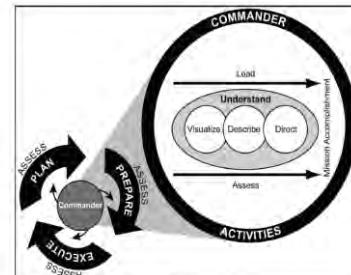
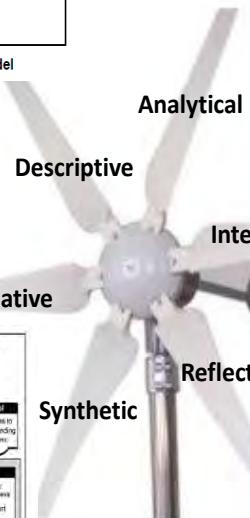
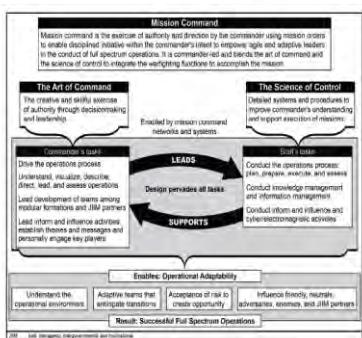


Figure 1-1. The operations process



[†]Figure 4-3. Mission command

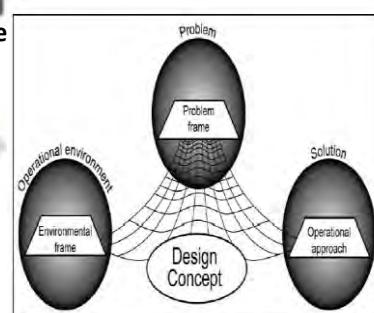


Figure 3-1. The design methodology

Figure 1

Analytical. The analytical principle applies objective critical reasoning skills to connect variables of fact presented in the environment and develop logical inferences that support

⁶ Ibid., 45.

decisions. For example, this is the underlying characteristic of step one in the Military Decision Making Process (MDMP, Mission Analysis).

Descriptive. The descriptive principle applies both critical and creative skills to express new and valid ideas and to counter old and potentially fallacious ideas. Military professionals practice this principle in the form of a narrative and a graphic, i.e. the course of action statement and sketch.

Synthetic. The synthetic principle applies critical and creative thinking to problem-solving by integrating all sources of information that are relative to understanding the environment and creating actions to adapt that environment to a preferred state. Military professionals practice this principle by development of the environmental frame, the problem frame, and the operational approach in the Army Design Methodology.

Evaluation. The evaluation principle applies critical judgments that determine the relative value of ideas, facts and assumptions, and allows for relatively better attempts at decisions. It is a systematic valuation of a concept while in development, a recommendation for any courses of action during planning, or the determination of outcomes from an operation already implemented.⁷ Military professionals practice this principle throughout the entire operations process of plan, prepare, execute, and assess.

Reflection. The reflection principle is the application of the critical and creative ability to think prior to action, while in action, or after the action is taken. This principle reflects Perez's sense of "humility and fallibility" as practitioners acknowledge their understanding is always incomplete. This characteristic of reflection-in-action is central to the art by which practitioners sometimes deal with situations of uncertainty, instability, uniqueness, and conflict."⁸ This art is reminiscent of the art of command in which the commander drives the operational process by understanding, visualizing, describing, directing, and conducting continuous assessment.

Interpersonal. The interpersonal principle, while more emotional than cognitive, is nonetheless a vital characteristic underlying both critical and creative thinking in the organizational setting of military units dealing with complex and ill-structured problems⁹. We can no more stop having emotions than we can stop having thoughts and the two are inextricably linked. For the latest veterans of Iraq and Afghanistan, the statement, "relationships matter," drove this home! In the context of those two wars, there was requirement for the continued application of emotional intelligence in a myriad of demanding circumstances. Examples include constructive relationships developed externally with tribes, national security forces, local government elements, and internally with sister units, joint services, other US government agencies, and even within the command of each individual unit. War is a group activity, and organizations that fail to maintain good relationships both internally and externally fail at critical and creative thinking. This principle epitomizes the discourse and collaboration described by

⁷ Carol H. Weiss, *Evaluation*, 2 ed. (Upper Saddle River, NJ: Prentice Hall, 1997), 1-19.

⁸ Donald A. Schon, *The Reflective Practitioner: How Professionals Think In Action* (Upper Saddle River, NJ: Basic Books, 1984), 49-50.

⁹ It is important to note that not all of the authors agreed to the validity of labeling the interpersonal principles because it mixes cognitive and affective terminology. For example, a military professional could lack interpersonal skills and still think creatively and critically. This illustrates the importance of this conversation for the profession. A profession develops its terminology, practices, and principles based on social construction of meaning surrounding its practice. For this article to have merit, it must engender this type of sense-making in professional discourse and debate.

Kem, and the “ethos” proposed by Perez. It is the one principle and skill that can make or break leaders attempting to foster critical and creative thinking organizations as they endeavor to meet the commander’s intent.

Figure 2 demonstrates the association of the above principles with the commanders driving tasks of the operational process.

Cognitive Principles of Critical & Creative Thinking in the Commander's tasks under MC

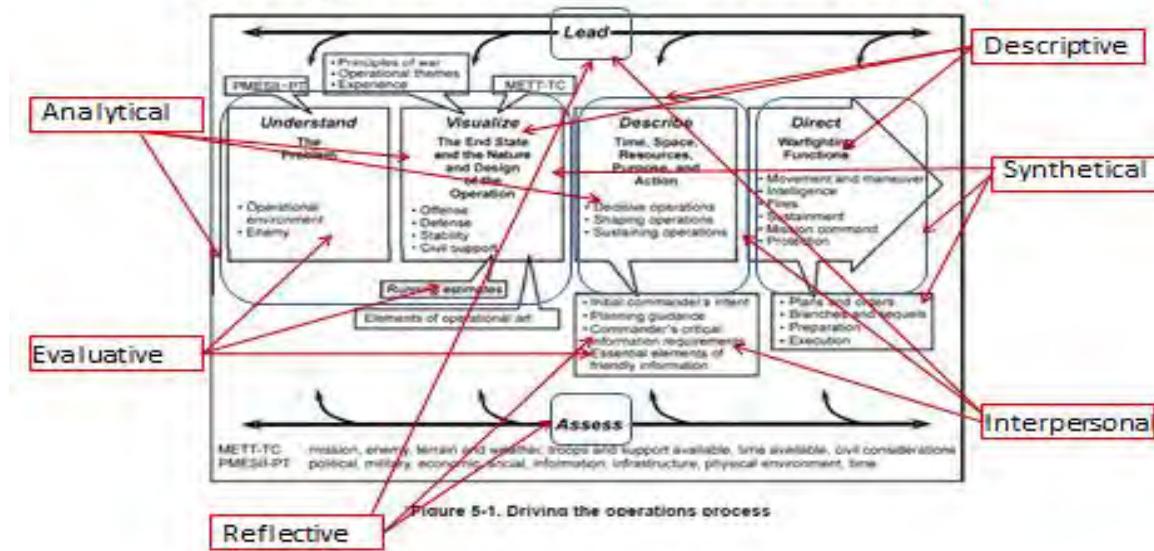


Figure 2

Figure 2 demonstrates that commanders and staffs routinely use these principles of critical and creative thinking in their execution of mission command. These principles provide the cognitive underpinning that drives operations. The descriptions of these mental activities from the various cognitive theorists, together with the practical descriptions of how military professionals have applied those theories, shows emerging principles of critical and creative thinking fundamental to military professional thought-- but is that enough?

How can we use this?

If these principles underpin many mental models used by military professionals, perhaps these principles can serve as a cognitive toolbox for assessing the quality of ideas and decisions made based on those ideas. These principles of critical and creative thinking can assist in identifying where an idea is incomplete or ill considered through a series of questions. Examples of questions could include, but are not limited to the following:

Analytical: Does the data support the stated conclusion supporting this idea?

Descriptive: Can I reframe the idea in my own words and with my own graphic depiction accurately? Can I accurately relay this idea to others?

Evaluative: Can this idea stand up to criticism with soundness intact?

Synthetic: When I describe this idea to others, can they reframe the idea for me in their own words and with their own graphic depiction accurately?

Reflective: Does this idea stand the test of quiet consideration?

Interpersonal: Is emotional interference (such as ego) getting in the way of the ability think clearly about the issue?

Understanding the principles critical and creative thinkers use leads to better thinking, to better decisions, and to better actions. Better thinking helps us avoid disasters and accomplish missions better, but also having good practical models and an implementing language helps us achieve these objectives. This is vital to critical and creative thinkers for three reasons; first, it provides a common vocabulary for the recognition of activities that accurately describe the type of thinking that military professionals employ. Second, it allows for better education in the use of critical and creative thinking. Third, and most importantly, it expands the military profession's thinking capacity to problems not normally considered within the profession's paradigm that leads to ill-considered actions; or better, it prevents those ideas from taking root in their organizations all together. The principles offered in this article are descriptions and not prescriptions in the true sense of flexible principles versus "fossilized" principles as John Dewey would describe principles of thinking.¹⁰ It is the flexible creative and critical thinking which will assist military professionals as they address the unique, ill-structured problems that await them in our ever changing and complex landscape of problems to be solved.

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¹⁰ John Dewey, How We Think (n.p.: D.C. Heath & Co., 1910), 213-19, <http://books.google.com/books?id=WF0AAAAAMAAJ&pg=PR2#v=onepage&q&f=false> (accessed June 7, 2011).

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